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ABSTRACT

Subjects were 36 female three-, four- and five-year-old children who free-played four different sets, each containing a culturally-defined feminine, masculine and neutral toy. A same- or opposite-sex adult was either present or absent during play. Results included the following: (1) girls played longer than boys with feminine and neutral toys, while boys played longer than girls with masculine toys; (2) there was a linear increase with age in the length of time both sexes played with feminine toys, but no age differences were found for masculine or neutral toys; and (3) there were no effects due to adult presence. These results are discussed in terms of sex-role development and methodological needs in psychometric and observational sex-typing research. (Author)

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THE EFFECTS OF AGE, SEX, AND ADULT PRESENCE ON PRESCHOOL CHILDREN'S SEX-TYPED TOY PLAY BEHAVIOR*

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Running Head: Toy Play

*The first two authors are equally responsible for the development of this research. A shorter version of this paper was presented as part of a symposium entitled Cognitive and Social Learning Approaches to Children's Sex-typed Attitudes and Behaviors, presented at the annual meeting of the American Psychological Association, San Francisco, August, 1977. The authors would like to thank the children, parents, teachers and directors of the Bloomington Developmental Learning Center and the Hoosier Courts Nursery School for their cooperation; Playskool, Mattell Toys, and Fisher-Price Toys for their help and support; Janet Alexander and Michael Vittorio for their aid in data collection and tape coding; and Judith Busch for editing this paper. Requests for reprints should be sent to C. S. Garrett, Department of Educational Foundations, College of Education, University of New Mexico, Albuquerque, NM 87131.

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Abstract

Twenty-six male and 26 female three-, four- and five-year-old children free-played for ten minutes with 12 toys. These were grouped into four different sets, each containing a culturally-defined feminine, masculine and neutral toy. A same- or opposite-sex adult was either present or absent during play. Results included the following: girls played longer than boys with feminine and neutral toys while boys played longer than girls with masculine toys; girls played longer with neutral toys than with either feminine or masculine toys, and equally long with feminine and masculine toys; boys played longer with masculine toys than with either feminine or neutral toys, and equally long with feminine and neutral toys; there was a linear increase with age in the length of time both sexes played with feminine toys, but no age differences were found for masculine or neutral toys; there were no effects due to adult presence. These results are discussed in terms of sex-role development and methodological needs in psychometric and observational sex-typing research.

Most previous research concerning children's sex-typed toy preferences and play behaviors has been psychometric or observational in nature. In the psychometric studies, children were presented with a selection of toys, either in picture form (Brown, 1957, 1958; DeLucia, 1963; Hartup & Zook, 1960; Laosa & Brophy, 1972; Ward, 1969) or the actual toys themselves (Fling & Manosevitz, 1972; Rabban, 1950; Ross & Ross, 1972). They were then asked to express their sex-typed toy preferences by choosing the toys that they like (Fling & Manosevitz, 1972; Laosa & Brophy, 1972; Rabban, 1950; Ross & Ross, 1972; Ward, 1969) or that a pictured figure of a child would like (Brown, 1957, 1958; DeLucia, 1963; Fling & Manosevitz, 1969; Hartup & Zook, 1960). The basic pattern of results from these studies shows that boys state preferences for culturally sex-appropriate toys by as early as three years of age (Fling & Manosevitz, 1972; Rabban, 1950); with age through the elementary school years, boys increase their sex-appropriate choices (Brown, 1957; DeLucia, 1963; Hartup & Zook, 1960) and decrease their sex-inappropriate ones (Hartup, Moore, & Sager, 1963). The pattern for girls is not as clear, however. Some studies find that girls select culturally sex-appropriate toys (DeLucia, 1963; Fling & Manosevitz, 1972; Hartup & Zook, 1960; Rabban, 1950) while some find that they select sex-inappropriate toys (Brown, 1957; Ross & Ross, 1972). Most of the former studies that examine age effects find that girls' sex-appropriate choices increase with age (DeLucia, 1963; Hartup & Zook, 1960) and sex-inappropriate ones decrease (Hartup, Moore, & Sager, 1963). Psychometric studies also show that boys tend to be more sex-typed than girls at comparable ages

(Brown, 1957; DeLucia, 1963; Minuchin, 1965) and that both boys and girls make more culturally sex-appropriate toy choices for boys (Ross & Ross, 1972).

Although there are many fewer observational studies of children's actual play behaviors with toys than there are psychometric studies, most of the observational studies have found sex differences in play behavior. Goldberg and Lewis (1969) found that 13-month-old boys and girls played with similar toys although girls spent more time with toys requiring fine motor coordination and boys spent more time with toys requiring gross motor coordination. Fagot (1974) studied a small sample of toddlers, 18- to 24-months, at their homes. She found that girls played more with soft toys and dolls and dressed up in adult clothes, while boys engaged in more block play and manipulation of objects and toys. Fagot and Patterson (1969), in an observational analysis of three-year-old children's play behavior in the preschool setting, found that girls played more with art materials while boys played more with blocks and transportation toys. They also concluded that both sexes spent equal time in sex-appropriate activities, but that girls spent less time in sex-inappropriate activities than boys did; however, this sex difference was not statistically tested. Brody (Note 1), using a small sample of children ages 3½ to 4, observed that boys played more with masculine toys tnan girls did, but that both sexes played equally with feminine and neutral toys. Minuchin (1965) placed nine-year-old children individually in a playroom containing miniature toys and reported that both sexes tended to play out sex-appropriate themes, although she stressed that there were many sex-

inappropriate themes also. Boys were more sex-typed than girls in their play themes. Thus, the results from the observational studies do not present internally consistent patterns of sex-typing in toy play.

While both observational and psychometric research have contributed to knowledge in the area of children's sex-typed toy preferences and play behaviors, there are two major problems associated with this research. The first problem concerns selection of the toys used in the research. Most of the psychometric research has used only toys that were sex-typed, generally by adults. Rosenfeld (Note 2) asked college students to sex-type a group of toys; pictures of these toys were then shown to boys and girls in the first through third grades. When asked to generate ways to change those toys to make them more fun, both boys and girls could devise more ways to change boys' toys; there were no sex differences in the children's scores. She concluded that boys' toys are more interesting and competency-eliciting for both sexes. This difference in the properties of the toys themselves may help to explain why several psychometric studies report that girls often choose boys' toys. In the observational studies children were either observed in their homes (Fagot, 1974; Goldberg & Lewis, 1969) or their preschools (Brody, Note 1; Fagot & Patterson, 1969) where the available toys were familiar and were limited to those provided by the caregivers, or in playrooms (Minuchin, 1965), where the toy selection procedures were not specified. Thus, again, the properties of the toys were not controlled.

In addition, as the above review indicates, children "know" the sex-roles well enough to choose between culturally-defined

masculine and feminine toys. However, the effects of including androgynous, or neutral, toy choices is not known. In the studies reviewed, only Brody (Note 1), Laosa and Brophy (1972), and Ross and Ross (1972) purposefully included neutral toy options; in these studies the properties of the sex-typed and neutral toys were not matched. Ross and Ross (1972) did not report the children's neutral choices; their statistics were based on sex-appropriate choices, which assumedly included the neutral ones, and sex-inappropriate choices. Laosa and Brophy (1972) found that children still made sex-typed choices on their psychometric test, even when neutral options were included. Brody (Note 1) found that boys engaged in more cross-sex toy play behavior than girls did, but that boys and girls played equally with both feminine and neutral toys. However, in a study examining elementary-age children's sex-typing of adult occupations, when neutral choices were available, elementary school children's verbally-reported sex-stereotypes were much more flexible than previous bipolar choice research indicated (Garrett, Ein, & Tremaine, 1977). The use of neutral toys in toy preference needs to be fully explored.

A second problem concerns the effects of the presence of adults on children's toy choices. Psychometric research requires an adult to administer the instrument. Of those studies that report on possible sex of experimenter effects, some have found them (e.g., DeLucia, 1963) and some have not (e.g., Laosa & Brophy, 1972; Ward, 1969). Hartup, Moore, and Sager's observational study (1963) found that preschool and early elementary school boys, when given the choice of unattractive neutral toys or attractive feminine toys,

were less likely to play with the sex-inappropriate toys when a female experimenter was present than when she was absent. The female adult's presence did not affect girls' choices between neutral and masculine toys. This study did not balance for sex of adult present, so the effects of a male adult are not known. The effects of the presence of adults on children's sex-role behaviors need to be further investigated.

The present observational study improves on methodological and substantive issues in toy preference research. It investigates the effects of age, sex, and the presence or absence of the same or opposite sex adult on young children's free play behavior with culturally-defined masculine, feminine and neutral matched toys.

Methodology

Subjects

The subjects were 26 male and 26 female three-, four- and five-year-old Anglo children from preschools serving primarily university-related families in a midwestern town.

Materials

Four different sets of toys, including mechanical devices, house sets, costumes and puzzles, were used in this study. Within each set three toys were chosen by the authors as representing culturally-defined feminine, neutral (i.e., appropriate for both sexes), and masculine toys. The toys within each set were chosen such that they were of the same approximate size, contained about the same number of pieces or moving parts, functioned equivalently, and so on. Toy sets are described with their feminine, neutral and

masculine alternatives, in that order. The mechanical device set consisted of: a mixer with beaters that rotated when a string was pulled, a camera with a lens that rotated when a knob was turned, and a drill with a bit that rotated when a string was pulled. The house sets included: a doll house with people and furniture; a Holiday Inn with people, furniture, and vehicles; and a Rescue Center with people and vehicles. The costumes consisted of: a gypsy costume with skirt, vest and mask; a cat costume with jumpsuit and mask; and a Batman costume with jumpsuit, cape and mask. The puzzles included: a Cinderella puzzle, a Jack and Jill puzzle, and a football player puzzle.

To check the validity of the authors' sex-typing judgments, two procedures were used. First, 34 undergraduate education students rated the 12 toys as appropriate in our culture for girls, boys, or both. The lowest agreement on any of the 12 toys was 75%. Thus, an adult sample sex-typed the toys in the same manner as the authors.

Second, an adult experimenter individually showed 16 boys and 16 girls from the subject sample a picture of each toy and said, "This is a (toy name). Who do you think would like to play with this toy the most?" The child answered verbally or pointed to one of three pictures of faces: a feminine choice (four girls' faces, scored as 1), a neutral choice (two girls' and two boys' faces, scored as 2), or a masculine choice (four boys' faces, scored as 3). Sex of experimenter was balanced across age and sex of child. The children were tested at least two weeks prior to actual data collection.

Each child was given a mean rating for her/his stereotyping of the adult-defined feminine toys as a group, of the neutral toys, and of the masculine toys. The grand mean of each group of toys was tested to see if it was different from 2, the neutral response. The children stereotyped the group of feminine toys as appropriate for girls (grand mean difference from 2 = -0.27, F = 10.89, df = 1/27, $p < .01$) and the group of masculine toys for boys (grand mean difference from 2 = 0.26, F = 7.02, df = 1/27, $p < .05$); they did not stereotype the neutral toys as more appropriate for either sex (grand mean difference from 2 = -0.03). Their consensual agreement was not as strong as the adults' agreement; they did not reach 75% agreement on any individual toy. Thus, the children did verbally stereotype the groups of toys in the expected cultural direction. See Diepold, Garrett, Kahn, and Cherry (Note 3) for further discussion of the instrument, procedures and results.

Procedures

A male or a female adult, from a pool of several adults, brought each child individually to the playroom where the 12 toys were displayed on three long tables. The adult named each toy for the child, explained how each worked, and then gave one of two sets of instructions. In the adult present condition the adult said to the child, "I am going to read while you play. You can play with anything that you would like." The adult then sat down at a table to one side of the playroom and started to read. S/he did not interact with the child. If the child tried to talk or to play with the adult, s/he was told that the adult was busy and that the child would have to play alone. In the adult absent condition the

adult told the child, "I will be in the hall just outside of the door. I will be back in soon, but while I am gone you can play with anything that you would like." The adult then left the room and closed the door. Each child was given ten minutes to play. The only exceptions to the procedures were for bathroom breaks for the children. The play sessions were videotaped from behind a one-way mirror.

Sex of adult and adult condition were balanced across age and sex of the children.

Coding

Two coders, from a pool of six female and male graduate and undergraduate students, coded each child's tape. They recorded, to the nearest second, the times the child started and stopped playing with each toy. If coding disagreements occurred, the tape was replayed until the coders agreed within three seconds. If a child played with two or more toys simultaneously, coders recorded times for all of the involved toys. If a child looked at or merely touched a toy, these behaviors were not considered play and hence were not coded. The dependent variable was the length of time each child played with each toy, averaged across the two raters.

Analyses

The data were analyzed using the complete least-squares multivariate analysis of variance model (Overall & Klett, 1972) for each of the three culturally-defined gender groups of toys. Since the cell sizes were not exactly equal, the factors were not completely orthogonal. To eliminate possible spurious results due to this

confounding, the data were reanalyzed with each effect and each interaction, by degree, in the last position. The basic design was a 2 (sex) by 3 (age) by 3 (adult condition: absent, same-sex adult as child present, opposite-sex adult present) fixed effects design. The age factor was analyzed using trend analysis to examine linear and quadratic changes with age. The adult condition was partitioned into two orthogonal tests: adult present compared to adult absent, and same-sex compared to opposite-sex adult present. For significant multivariate effects, the univariate means of the toys with the largest standardized discriminant function coefficients were examined for patterns.

To examine time-sharing behavior across the toy groups, each child was given a total score for the length of time s/he played with each gender group of toys. A 3 (repeated measure of toy gender group: feminine, masculine, or neutral) by 2 (sex) univariate analysis of variance was run on these scores.

Results

The following results are reported separately for feminine toys, neutral toys, masculine toys, and time-sharing across toy gender groupings.

Feminine Toys

There were several significant multivariate effects for the dependent variable of length of time played with feminine toys. The multivariate sex effect was significant ($F = 4.53$, $df = 4/31$, $p < .005$); girls played longer than boys did with the feminine toys (see Table 1 for means and standardized discriminant function

coefficients). The one interesting exception to this pattern was the mixer, which was used by boys longer than by girls. From the videotapes, it was subjectively clear that boys used the mixer in many "masculine" ways: as a machine gun, an outboard motor, and a drill, for example.

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Insert Table 1 here

The multivariate linear component of the trend analysis was significant ($F = 4.17$, $df = 4/31$, $p < .01$). As age increased, there was a linear increase in length of time both boys and girls played with feminine toys. The only exception to this pattern was for the doll house; the five-year-olds played with the doll house for much shorter lengths of time than either the three- or four-year-olds (see Table 2).

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Insert Table 2 here

The multivariate interaction of sex of child by linear component of the trend analysis was significant ($F = 3.31$, $df = 4/31$, $p < .05$). With age, girls tended to change the length of their playing behavior more rapidly than did boys (see Table 2).

No other multivariate effects were significant.

Neutral Toys

The only significant multivariate effect was that of sex ($F = 2.73$, $df = 4/31$, $p < .05$). Girls played longer with the neutral toys than boys did (see Table 1).

Masculine Toys

Boys played longer with the masculine toys ($F = 5.97$, $df = 4/31$, $p < .001$) than girls did (see Table 1). There were no other significant multivariate effects.

Time-sharing Across Toy Gender Groupings

The univariate interaction of sex with toy gender groups (F = 14.09, df = 2/100, $p < .001$) was significant. Simple main effects were computed to examine time-sharing across toy gender groups within each sex. Both girls (simple F = 5.14, df = 2/50, $p < .01$) and boys (simple F = 14.38, df = 2/50 $p < .001$) played for different lengths of time with the different gender groups of toys. Using the Newman-Keuls post hoc tests on the means, girls played more with the neutral group of toys than with either the feminine ($p < .01$) or the masculine ($p < .01$) toys and played equally with the feminine and masculine toys. Boys, however, played more with the masculine toys than with either the feminine ($p < .01$) or the neutral ($p < .01$) toys and played equally with the feminine and neutral toys. Thus, girls were androgynous in their play behavior in terms of toy choices while boys were culturally sex-appropriate in their choices.

Discussion

These results extend and clarify the research literature on children's sex-typed play behavior in several important areas. First, if boys and girls are compared within a culturally-defined sex-typed grouping of toys, sex differences in play behavior result. Boys played with masculine toys more than girls did, while girls played with feminine toys more than boys did. This pattern emerged even when the masculine and feminine toys were matched for size, moving parts, competency-eliciting properties, and other possible relevant variables. The addition of comparable neutral toys in this study showed that girls played more than boys with this group of toys. However, a different picture emerged when boys' and

girls' play behavior was compared across the gender groupings of toys. Boys' play followed a sex-typed pattern that is predictable from the previous literature: they played more with masculine toys than with either feminine or neutral toys and played equally with feminine and neutral toys. Girls' play was androgynous in that they played more with neutral toys than with either feminine or masculine toys and equally with masculine and feminine toys. This finding supports the psychometric literature that indicates that boys are more sex-typed in their toy choices than girls of comparable ages (Brown, 1957; DeLucia, 1963; Minuchin, 1965) but extends it to indicate that girls are androgynous in their play choices. This finding does not correspond to Fagot and Patterson's (1969) or Brody's (Note 1) observational results that girls and boys were equally sex-typed in terms of appropriate activities, while girls were more sex-typed than boys in that they spent less time in sex-appropriate activities. These studies were conducted in the children's preschools with no control over the available toys, and their results reflect children's sex-typed toy play preferences in that type of setting. Our study controlled and matched toy selections such that the children had access to adult-validated sex-typed and neutral choices within each toy set. Thus, our results reflect children's play behavior when given these choices. This study points out the importance of having attractive androgynous toys available for children's play, in natural settings as well as in research studies.

Second, the only main age effect was for the feminine toys. The linear trend indicated that, with age, boys and girls played

more with feminine toys. There were no age effects for neutral or masculine toys. The psychometric literature indicates that as children age, they express preferences for fewer sex-inappropriate toys (Hartup, Moore, & Sager, 1963). This difference between the results of this study and that of the psychometric literature may be a real difference between children's verbal toy choices and their actual play behavior. Research is needed that compares children's verbal toy choices and actual toy play behavior (see Diepold, Garrett, Kahn, and Cherry, Note 3, for a discussion of this issue).

Third, the presence or absence of an adult during play or the sex of the adult present made no differences in the children's play behavior. The children were not using the adults as social cues to direct their behavior toward sex-appropriate toys. However, the adults in this study did not interact socially with the children. In addition, the adults were strangers to the children. Thus, the mere presence of a strange adult did not influence the children's sex-typed play behavior. The presence of adults relevant to the children, such as teachers, may affect children's play behavior.

Fourth, this study shows that the choices of toys for inclusion in the research are important. Children played differentially with the different toys within a given gender group. They obviously have other factors, in addition to the culturally-prescribed sex linkages, that influence their play behavior. For example, although both sexes exhibited a linear increase in play with the feminine toys as age increased, there was a general decrease in play with the house with age. Thus, toy preference and play research should include several types of toys.

Much further research is needed in the area of sex-typed toy preferences. These studies should utilize longitudinal and mixed designs to separate cultural and developmental effects. Children from a broader range of socioeconomic classes and ethnic groups and adults with differing relationships to the children should be used in the design of these studies.

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Table 1. Means, Standard Deviations (in parens), and Standardized Discriminant Function Coefficients by Sex for Length of Time in Seconds Played with Toys

	Standardized Discriminant Function Coefficient	Girls (n=26)	Boys (n=26)
Masculine Toys			
Drill	0.53	18.48 (27.12)	41.15 (51.58)
Football Puzzle	0.07	23.98 (56.30)	14.85 (40.26)
Batman Costume	0.29	5.38 (17.16)	46.83 (126.81)
Rescue Center	0.87	83.64 (89.71)	254.21 (176.11)
Mean for Play with all Masculine Toys		131.48 (107.90)	357.04 (209.02)
Feminine Toys			
Mixer	0.48	15.60 (24.46)	47.67 (56.31)
Cinderella Puzzle	0.77	88.38 (155.87)	4.35 (11.25)
Gypsy Costume	0.40	9.96 (27.18)	2.38 (6.12)
Doll House	0.11	52.98 (85.54)	37.67 (74.78)
Mean for Play with all Feminine Toys		166.92 (159.94)	92.08 (102.25)
Neutral Toys			
Movie Camera	0.19	18.46 (18.92)	34.64 (59.20)
Jack and Jill Puzzle	-0.28	7.86 (20.60)	3.36 (9.83)
Cat Costume	-0.37	25.48 (111.13)	1.75 (5.85)
Holiday Inn	-0.86	238.31 (174.96)	110.69 (125.01)
Mean for Play with all Neutral Toys		290.12 (194.43)	150.44 (132.56)

Table 2. Means, Standard Deviations (in parens) and Standardized Discriminant Function Coefficients for Length of Time in Seconds Played with Feminine Toys by Age and Sex of Child

	Standardized Discriminant Function Coefficients			Age		
	Linear Trend	Interaction of Sex with Linear Trend	Sex	3	4	5
Feminine Toys						
Mixer	0.23	0.04	Girls	21.83 (19.12)	7.11 (11.27)	18.12 (35.41)
			Boys	37.44 (42.44)	48.61 (47.56)	58.12 (80.14)
			Mean	29.64 (32.93)	27.86 (39.75)	38.12 (63.31)
Cinderella	0.75	-0.89	Girls	43.44 (90.03)	28.61 (82.15)	206.19 (216.19)
			Boys	5.44 (9.30)	5.56 (16.67)	1.75 (4.95)
			Mean	24.44 (65.09)	17.08 (58.71)	103.97 (181.57)
Gypsy Costume	0.56	0.37	Girls	0.50 (1.50)	10.33 (16.98)	20.19 (45.50)
			Boys	0.00 (0.00)	2.67 (5.96)	4.75 (8.90)
			Mean	.25 (1.06)	6.50 (12.96)	12.47 (32.66)

Table 2. (Continued)

	Standardized Discriminant Function Coefficients			Age		
	Linear Trend	Interaction of Sex with Linear Trend	Sex	3	4	5
Doll House	0.60	0.49	Girls	103.00 (125.46)	39.33 (46.66)	12.06 (16.92)
			Boys	20.06 (34.38)	81.28 (112.90)	8.44 (15.30)
			Mean	61.53 (98.92)	60.31 (86.54)	10.25 (15.70)